

Appln. No. 09/840,193
Amendment dated July 19, 2005
Reply to Office Action of May 20, 2005

REMARKS/ARGUMENTS

Reconsideration of the present application is respectfully requested.

The May 20, 2005 Final Office Action and the Examiner's comments have been carefully considered. In response, remarks are set forth below in a sincere effort to place the present application in form for allowance.

PRIOR ART REJECTIONS

In the Office Action claims 1, 2 and 8 are rejected under 35 USC 102(b) as being anticipated by USP 5,732,149 (Kido et al.). Claims 6 and 7 are rejected under 35 USC 103(a) as being unpatentable over Kido et al., and further in view of USP 6,493,458 B2 (Yasui et al.). Claims 3-5 are rejected under 35 USC 103(a) as being unpatentable over Kido et al. and further in view of USP 6,335,980 (Armato, III et al.). Claim 9 is rejected under 35 USC 103(a) as being unpatentable over Kido et al. and further in view of USP 6,594,380 B2 (Shinbata).

The present claimed invention as defined by independent claim 1 is directed to a radiation image processing apparatus including an object region extracting section and a contour recognizing section. The object region extracting section

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detects an amount of radiation energy transmitted through an object representing a body part, forms radiation data including radiation image data of the object and extracts an object region corresponding to the radiation image data of the object from the radiation data. The contour recognizing section recognizes a contour of a body part of the object based on the object region extracted by the object region extracting section. The contour recognizing section has data of classifying judgment criteria for each of a plurality of different kinds of predetermined contours, judges the kind of recognized contour to belong with one of plural different kinds of contours on the basis of the classifying judgment criteria and provides a feature amount regarding the kind of recognized contour in accordance with the judgment results.

As recited in amended claim 1, a radiation image processing apparatus includes an object region extracting section and a contour recognizing section. The object region extracting section extracts an object region corresponding to the radiation image data of the object from the radiation data (see Figs. 3(a) to 3(d) of the present application). The contour recognizing section has data of classifying judgment criteria for each of a plurality of different kinds of predetermined contours (see Figs.

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4(a), 4(b), 5, 6(a) to 6(d), and 7(a) to 7(d) and page 63, line 4 of the present application). Then, the contour recognizing section judges the kind of recognized contour to which one of the plural different kinds of contours belongs on the basis of the classifying judgment criteria and provides a feature amount regarding the kind of recognized contour in accordance with the judgment result (see page 66, line 3 of the present application).

As a result, the radiation image processing apparatus of the present claimed invention specifies the kind of body part of the object on the basis of the feature amount.

On page 4, lines 1-3 of the Office Action the Examiner asserts that Kido et al. (which is assigned to the same Assignee as the present application) describe characteristic values that define all types of different characteristics of an imaged object. Furthermore, on page 3, lines 7-9 of the Office Action the Examiner states that Applicant has not offered any evidence to support the conclusion that the "claimed feature amount" is patentably distinct from the "characteristic value."

As set forth above and in the last response, in the invention recited in claim 1, the radiation image processing apparatus includes an object region extracting section and a contour recognizing section.

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The object region extracting section extracts an object region corresponding to the radiation image data of the object from the radiation data, see Figs. 3(a) to 3(d) of the present application.

The contour recognizing section has data of classifying judgment criteria for each of the plurality of different kinds of predetermined contours (see Figs. 4(a), 4(b), 5, 6(a) to 6(d), and 7(a) to 7(d) and page 63, line 4 of the present application). Then, the contour recognizing section determines in which one of the plurality of different kinds of contours the recognized contour belongs on the basis of the classifying judgment criteria, and provides a feature amount regarding the kind of recognized contour in accordance with the judgment result (see page 66, line 3 of the present application).

As a result, the radiation image processing apparatus of the present claimed invention specifies the kind of the body part of the object on the basis of the feature amount.

As explained above, a feature of the present invention resides in that the contour recognizing means has data of classifying judgment criteria for each of plural different kinds of predetermined contours, judges in which of the plurality of different kinds of contours the recognized contour belongs on the

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basis of the classifying judgment criteria, and provides a feature amount regarding the kind of recognized contour in accordance with the judgment result.

Kido et al. merely disclose a technique regarding an object region extracting section. Namely, as explicitly disclosed at column 3, lines 2 - 14 of Kido et al., the reference teaches providing an irradiation field region extracting apparatus to extract an irradiation field region even when the rectangular irradiation field is inclined with respect to the side of an image or even when a photographic object is photographed in an irradiation field, the configuration of which is not rectangular but polygonal.

As can be seen from Fig. 18 of Kido et al., the irradiation field region corresponds to the object region of the present invention. Accordingly, Kido et al. do not disclose, teach or suggest the contour recognizing means of the present claimed invention to specify the kind of body part in the image.

With regard to "characteristic values", Kido et al. teach extracting the boundary line of the irradiation field region in accordance with characteristic values (see column 3, lines 47-49 of Kido et al.).

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More specifically, the values used as the characteristic value are a dispersion value, a standard deviation and a difference between the maximum and the minimum of image data included in the small region (see column 3 lines 50-54 with reference to Fig. 8 of Kido et al). Based on these characteristic values, the irradiation field region is extracted as shown in Fig. 6.

Consequently, since Kido et al. merely disclose an object region extracting section and do not disclose, teach or suggest classifying judgment criteria for each of plural different kinds of predetermined contours and a feature amount, the present claimed invention is not anticipated under 35 USC 102 nor rendered obvious under 35 USC 103 by Kido et al.

That is, the present claimed invention as defined by independent claim 1 is patentable over Kido et al. because the reference does not disclose, teach or suggest a radiation image processing apparatus including, inter alia:

a contour recognizing section that recognizes a contour of the body part of the object based on the object region extracted by the object region extracting section, wherein the contour recognizing section has data of classifying judgment criteria for each of the plurality of kinds of predetermined contours, judges the kind of recognized contour to which one of the plural different kinds of contours belongs on the basis of the classifying judgment criteria, and provides a fixture amount regarding the kind

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of recognized contour in accordance with the judgment result (see claim 1, lines 10-19).

None of the references of record close the gap between the present claimed as defined by claim 1 and the cited references. Therefore, the present claimed invention as defined by claim 1 is patentable over all of the cited references under 35 USC 102 as well as 35 USC 103.

Claims 2-9 are either directly or indirectly dependent on claim 1 and are patentable over the cited references in view of their dependence on claim 1 and because the references do not disclose, teach or suggest each of the limitations set forth in claims 2-9.

In view of all of the foregoing, the passing of this application to allowance with claims 1-9 is respectfully requested.

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Allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner disagrees with any of the foregoing, the Examiner is respectfully requested to point out where there is support for a contrary view.

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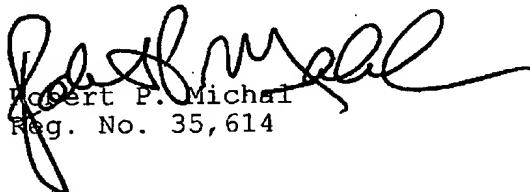
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If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,


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